Claims

1.   A welding system including:

a wire feeding unit which feeds a welding wire to a welding torch;

an actuator which holds the welding torch and moves the welding torch;

a controller which has a position control system and drive-controls the actuator; and

a welding power supply unit which applies weld output between a workpiece and the welding wire,

wherein the welding torch is moved by the actuator in a direction separating from the workpiece thereby to control the velocity of the welding wire for the workpiece; and

the controller includes, separately from the position control system, a dedicated separation control system which moves the actuator in the direction where the welding torch is separated from the workpiece.

2.   The welding system according to Claim 1, wherein the separation control system performs feedforward control.

3.   The welding system according to Claim 1, wherein the separation control system is used only when the welding torch is moved in the direction separating from the workpiece.

4.   The welding system according to Claim 1, including a multi-articulated robot driven through a reduction gear by a motor, the system adapting a method of detecting collision of the multi-articulated robot comprising the steps of:

sensor-less detecting external force due to collision by subtracting a kinetic torque obtained by an inverse kinetic calculation of a robot from a torque outputted to the reduction gear by the motor;

judging that an arm has received the external force in case that the detected value of the external force is greater than a predetermined threshold,; and

increasing the threshold for detection of collision to lower collision detecting sensibility in case that a command acceleration of the robot operation is greater than a predetermined value.

5. The welding system according to Claim 4, wherein the threshold for detection of collision is increased, and this state where the threshold is increased is kept for the predetermined time in case that the command acceleration of the robot operation is greater than the predetermined value.

6. A consumable electrode type welding method, which, by means of a welding system including a wire feeding unit which supplies a welding wire to a welding torch, an actuator which holds the welding torch and moves the welding torch, a controller which has a position control system and drive-controls the actuator, and a welding power supply unit which applies weld output between a workpiece and the welding wire, moves the welding torch by the actuator in a direction separating from the workpiece, thereby to control the velocity of the welding wire for the workpiece,

in that the controller includes, separately from the position control system, a dedicated separation control system for moving the actuator in the direction where the welding torch is separated from the workpiece.

7. The consumable electrode type welding method according to Claim 6, wherein the separation control system performs feedforward control.

8. The consumable electrode type welding method according to Claim 6, used only when the welding torch is moved in the direction separating from the workpiece.

9. The consumable electrode type welding method according to Claim 6, wherein a multi-articulated robot, which is driven through a reduction gear by a motor, is used, the method comprising the steps of:

sensorless detecting external force due to collision by subtracting a kinetic torque obtained by an inverse kinetic calculation of a robot from a torque outputted to the reduction gear by the motor;

judging that an arm has received the external force in case that the detected value of the external force is greater than a predetermined threshold; and

increasing the threshold for detection of collision to lower collision detecting

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sensibility in case that a command acceleration of the robot operation is greater than a predetermined value.

10.   The consumable electrode welding method according to Claim 8, in case that the command acceleration of the robot operation is greater than the predetermined value, the threshold for detection of collision is increased, and this state where the threshold is increased is kept for the predetermined time.